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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* SEIJI ASAOKA, KATSUYA KOYAMA,  
TOSHITAKA TSUZUKI, and TOMOHIRO HASHIMOTO

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Appeal 2010-003318  
Application 10/049,357  
Technology Center 1600

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Before ERIC GRIMES, CAROL A. SPIEGEL, and MELANIE L.  
McCOLLUM, *Administrative Patent Judges*.

GRIMES, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

This is an appeal under 35 U.S.C. § 134 involving claims to a  
cosmetic (e.g., hairspray) composition. The Examiner has rejected the

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil  
action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing,  
as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE”  
(paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery  
mode) shown on the PTOL-90A cover letter attached to this decision.

claims as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We affirm-in-part.

### STATEMENT OF THE CASE

The Specification discloses that using an amphoteric urethane resin and a water-soluble resin together results in a cosmetic with good touch and durability (Spec. 2: 20 to 3: 3).

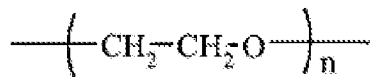
Claims 10-14, 16, 17, 19 and 20 are on appeal. Claims 10 and 16 are representative and read as follows:

10. A cosmetic composition comprising a blend of an amphoteric urethane resin having at least one carboxyl group and at least one tertiary amino group in one molecule, and a water-soluble resin other than an amphoteric urethane resin,

wherein the blend of the amphoteric urethane resin and water soluble resin provide a cosmetic resin having both touch and durability versus a cosmetic composition having only a water-soluble resin or an amphoteric urethane resin,

wherein the amphoteric urethane resin is formed from the reaction of a polyol chosen from polyester polyol and/or polyether polyol, a polyisocyanate, a compound having active hydrogen(s) and carboxyl group(s), and a compound having active hydrogen(s) and tertiary amino group(s), and

wherein the amphoteric urethane resin has structural units derived from ethylene oxide (EO) of the following general formula –



wherein n is 20 to 120.

16. The cosmetic composition of claim 10, wherein the amphoteric urethane resin has in its structure at least one polysiloxane bond.

The claims stand rejected under 35 U.S.C. § 103(a) as follows:

- Claims 10-14, 17, and 20 in view of Bhatt<sup>2</sup> and Kim;<sup>3</sup> and
- Claims 11-13, 16, and 19 in view of Bhatt, Kim, de la Poterie,<sup>4</sup> and Bolich.<sup>5</sup>

## I.

### *Issue*

The Examiner has rejected claims 10-14, 17, and 20 under 35 U.S.C. § 103(a) as being obvious in view of Bhatt and Kim. Claims 11-14, 17 and 20 have not been argued separately and therefore stand or fall with claim 10. 37 C.F.R. § 41.37(c)(1)(vii).

The Examiner finds that Bhatt discloses “hair spray compositions containing a carboxylated polyurethane,” where the “polyurethane resin can be made with polyoxyethylene diols.... [T]he number of possible ethylene oxide units is 9.1 to 454.5.” (Answer 4.) The Examiner also finds that Bhatt discloses “that the hair spray compositions contain a variety of conventional optional ingredients,” including water soluble polymers, and discloses that “[a]mines, such as ethylenediamine, propylenediamine, monoethanolamine, and diglycolamine, can be added,” although it does not disclose adding tertiary amines (*id.*).

The Examiner finds that Kim discloses “polyurethane resins ... formed from at least one diisocyanate or reaction product thereof..., and at least one diol, primary or secondary amino alcohol, primary or secondary

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<sup>2</sup> Bhatt et al., US 2002/0071811 A1, June 13, 2002

<sup>3</sup> Kim et al., US 6,335,003 B1, Jan. 1, 2002

<sup>4</sup> De la Poterie et al., US 5,972,354, Oct. 26, 1999

<sup>5</sup> Bolich, Jr. et al., US 5,100,658, Mar. 31, 1992

diamine or primary or secondary triamine each with one or more tertiary, quaternary or protonated tertiary amine nitrogen atoms” (*id.*). The Examiner also finds that Kim teaches that the “polyurethanes resins are ... beneficial because of their flexibility and decrease of stickiness and brittleness when applied to the hair” (*id.* at 4-5). The Examiner concludes that it “would have been obvious to one of ordinary skill in the art ... to substitute the tertiary amines taught by Kim et al. for the amines taught by Bhatt et al. because of the expectation of achieving [ ] hair spray formulations that ... decrease the stickiness and brittleness of the product” (*id.* at 5).

Appellants contend that the cited references do not suggest an amphoteric urethane resin formed from a polyester polyol or a polyether polyol (Appeal Br. 13-15). Appellants also contend that it would not have been obvious to use Kim’s tertiary amines in Bhatt’s polyurethane resin (*id.* at 16-17) and that Bhatt does not suggest a composition containing an amphoteric urethane resin in combination with a water-soluble resin (*id.* at 17-18).

The issue with respect to this rejection is: Does the evidence of record support the Examiner’s conclusion that the cited references would have made obvious using Kim’s tertiary amines in Bhatt’s polyurethane resin, thereby producing a composition comprising an amphoteric urethane resin formed from a polyester polyol or a polyether polyol, in combination with a water soluble resin?

### *Findings of Fact*

1. Bhatt discloses “hair spray compositions containing hydrophilic, carboxylated polyurethane resins” (Bhatt 2, ¶ 0016).

2. Bhatt discloses that the carboxylated polyurethane resin can be produced by reacting: a diol component comprising a polyoxyalkylene diol; an alkylene glycol; a diisocyanate; water; and a 2,2-di(hydroxymethyl)-alkanoic acid (*id.* at 2, ¶ 0023).

3. Appellants acknowledge that a diisocyanate is a polyisocyanate and that a 2,2-di(hydroxymethyl)alkanoic acid is a compound having active hydrogen(s) and carboxyl group(s), as recited in claim 10 (Appeal Br. 13).

4. A polyoxyalkylene diol contains two hydroxyl groups and multiple ether linkages between alkylene oxide subunits, and is therefore a polyether polyol.

5. Bhatt discloses that the

hydrophilic carboxylated polyurethane resin contains polyoxy-alkylene units, i.e., soft segments, and alkylene units, i.e., hard segments, connected through urethane linkages. Also incorporated into the polymer chain is a small amount of diol having a pendant carboxyl group. The polymer chain also contains urea linkages resulting from a reaction between the water and isocyanate groups, which modify the hair styling properties of the polyurethane.

(*Id.* at 2, ¶ 0024.)

6. Bhatt discloses that “[a]n amine can be used in the reaction mixture for at least a portion of the water.... Amines that can be used in the reaction mixture are ethylenediamine, propylenediamine,” etc. (*id.* at 4, ¶ 0036).

7. Bhatt discloses that the polyurethane resin can comprise “the reaction product of: a diol component comprising a polyoxyalkylene diol, preferably a polyoxyethylene diol having an  $M_n$  of about 400 to about 20,000” (*id.* at 3, ¶ 0035).

8. The Examiner finds that a polyoxyethylene diol with a molecular weight of 400 to 20,000 contains 9.1 to 454.5 ethylene oxide units (Answer 4). Appellants do not dispute this finding.

9. Bhatt discloses that the “aqueous formulations of the present invention also can contain conventional hair spray adjuvants,” including protein hydrolysates (*id.* at 6, ¶ 0068).

10. Kim discloses ingredients for cosmetic and pharmaceutical preparations that are

cationic polyurethanes and polyureas formed from (a) at least one diisocyanate or reaction product thereof with one or more compounds containing two or more active hydrogen atoms per molecule, and (b) at least one diol, primary or secondary amino alcohol, primary or secondary diamine or primary or secondary triamine each with one or more tertiary, quaternary or protonated tertiary amine nitrogen atoms.

(Kim, col. 2, ll. 12-27.)

11. Kim discloses that its polyurethanes are useful as film-formers in hair spray compositions, among other things (*id.* at col. 7, ll. 57-58).

12. Kim discloses that prior art film formers caused problems of stickiness or brittleness when used in hair sprays, but its polyurethanes are free of these disadvantages (*id.* at col. 1, l. 50 to col. 2, ll. 15).

### *Analysis*

Claim 10 is directed to a cosmetic composition comprising an amphoteric urethane resin having carboxyl and tertiary amino groups blended with a different, water-soluble resin. Claim 10 also requires that the amphoteric urethane resin is formed from the reaction of four specified components (a polyester polyol or polyether polyol, a polyisocyanate, a compound having an active hydrogen and carboxyl group, and a compound

having an active hydrogen and tertiary amino group) and has structural units composed of 20-120 ethylene oxide-derived subunits.

Bhatt discloses carboxylated polyurethane resins for use in hair care compositions that are produced by reacting: a diol component comprising a polyoxyalkylene diol, an alkylene glycol, a diisocyanate, water, and a 2,2-di(hydroxymethyl)alkanoic acid. Bhatt discloses that the polyoxyalkylene diol is preferably a polyoxyethylene diol having a molecular weight that corresponds to 9-454 ethylene oxide units. Bhatt also discloses that an amine (e.g. ethylenediamine) can be used in the reaction mixture for at least a portion of the water, and that the composition can also contain conventional hair spray additives including protein hydrolysates (water-soluble resins).

Kim discloses that including a compound having a tertiary, quaternary, or protonated tertiary amine nitrogen when making cationic polyurethanes provide desirable properties for hair care compositions. In view of the advantageous properties for cationic polyurethanes disclosed by Kim, one of skill in the art would have been motivated to use a compound having a tertiary amino group, as disclosed by Kim, in place of the amines suggested by Bhatt in Bhatt's reaction mixture, thereby producing the amphoteric polyurethane resin recited in claim 10.

Appellants argue that the cited references do not disclose a polyurethane that is the reaction product of a polyol chosen from polyester polyol or polyether polyol (Appeal Br. 13-14). Appellants argue that the claimed "invention utilizes a polyol chosen from the reaction product of a polyhydric alcohol and a dicarboxylic acid or an alkylene oxide, whereas Bhatt utilizes an alkylene glycol" (*id.* at 14).



This argument is not persuasive. Claim 10 specifies that the polyol in the polyurethane reaction mixture is a polyester polyol or polyether polyol. Bhatt discloses a polyurethane reaction mixture with a polyoxyalkylene diol, which is polyether polyol. The Specification supports the Examiner's interpretation of a "polyol" as including a diol (Answer 8) (see Spec. 6: 8-13, which cites diisocyanates as examples of polyisocyanates).

Appellants argue that the "amines disclosed in Bhatt are those with active hydrogens, for example ethylenediamine, propylenediamine, monoethanolamine, diglycolamine.... These amines are such that the amine group is polymerizable, i.e. reactive towards the isocyanates." (Appeal Br. 16). Appellants reason that "it is well known that tertiary and quaternary amine groups are not reactive with isocyanates. Tertiary and quaternary amine groups do not contain an active hydrogen (i.e. they are functional amines) and thus cannot be used in a reaction with an isocyanate." (*Id.*)

This argument is not persuasive. Kim expressly discloses the reaction of primary or secondary diamines or triamines with diisocyanate, and further specifies that the diamines or triamines also contain at least one tertiary, quaternary or protonated tertiary amine nitrogen atoms. Thus, one of skill in the art would expect that Kim's amine compounds, which include primary or secondary amines with active hydrogens, would undergo the reaction required by Bhatt.

Appellants argue that

[a]lthough Bhatt does disclose optional ingredients that may be water soluble, Appellants respectfully disagree with the Office's conclusion that ... it would have been obvious to one of ordinary skill in the art to include a water-soluble resin in a blend with an amphoteric urethane resin.... [T]he Office has not articulated any reason why one of ordinary skill in the art would

have chosen to blend an amphoteric urethane resin ... with a water-soluble resin other than an amphoteric urethane resin.

(Appeal Br. 18.)

This argument is not persuasive. Bhatt expressly discloses that aqueous compositions containing its polyurethane resins may also contain conventional hair spray adjuvants such as protein hydrolysates. Thus, it would have been obvious to include protein hydrolysates in Bhatt's hair spray composition for their conventional use. The Examiner and Appellants use "polymer" as a synonym for the claim term "resin" (see Answer 4 ("water soluble polymer"); Appeal Br. 18 ("Water-soluble resins (or polymers)"). Protein hydrolysates are water-soluble chains of amino acids, and therefore water-soluble polymers (resins).

### *Conclusion of Law*

The evidence of record supports the Examiner's conclusion that the cited references would have made obvious using Kim's tertiary amines in Bhatt's polyurethane resin, and combining the resulting polyurethane with a water-soluble resin, thus producing a composition meeting the limitations of claim 10.

## II.

### *Issue*

The Examiner has rejected claims 11-13, 16, and 19 under 35 U.S.C. § 103(a) as being obvious in view of Bhatt, Kim, de la Poterie, and Bolich.

With regard to claims 11-13 Appellants argue only that de la Poterie does not cure the deficiencies of Bhatt and Kim in suggesting the invention of claim 10 (Appeal Br. 21). This argument is not persuasive because, for the reasons discussed above, we conclude that Bhatt and Kim would have

made obvious the invention of claim 10. Thus, the rejection of claims 11-13 as being obvious in view of Bhatt, Kim, de la Poterie, and Bolich is affirmed.

Claim 16 depends from claim 10 and further requires that the amphoteric urethane resin has at least one polysiloxane bond in its structure. The Examiner finds that de la Poterie discloses polyurethanes “comprising at least one silicone-containing block” (Answer 6). The Examiner finds that Bolich discloses “silicones, in the form of resins, as hair conditioners” (*id.*). The Examiner concludes that it “would have been obvious to one of ordinary skill in the art ... to add the silicone containing blocks of a polyurethane resin, taught by de la Poterie et al. to the polyurethane resin of the combined references because of the expectation of achieving a polyurethane resin that imparts conditioning properties to the hair, as taught by Bolich” (*id.*).

Appellants contend that Bolich teaches away from the claimed invention because, “[c]ontrary to the water-soluble resin other than an amphoteric urethane resin, as recited in the pending claims, Bolich, Jr. discloses silicone polymers that are water insoluble” (Appeal Br. 21).

The issue with respect to this rejection is: Does the evidence of record support the Examiner’s conclusion that the cited references would have made obvious the composition of claim 16?

*Additional Findings of Fact*

13. De la Poterie discloses a “composition [that] includes in particular an aqueous dispersion of particles of film-forming polymer and can be employed as a make-up product” (de la Poterie, col. 1, ll. 5-9), especially for application to the skin, eyelids, and lips (*id.* at col. 2, ll. 48-54).

14. De la Poterie discloses that the film-forming polymers may be “anionic, cationic, nonionic or amphoteric polyurethanes,” among others (*id.* at col. 3, ll. 11-15).

15. De la Poterie discloses that the polyurethane can include “at least one silicone-containing block, substituted or otherwise, branched or otherwise, for example polydimethylsiloxane or polymethylphenylsiloxane” (*id.* at col. 3, ll. 16-27).

16. Bolich discloses a “vehicle system which provides a desirable rheology to products formulated therewith, enhanced dispersion of actives therein, and improved deposition of actives therefrom” (Bolich, abstract).

17. Bolich discloses that the “vehicle systems are particularly useful in hair care compositions, especially rinse-off hair conditioning compositions” (*id.*).

18. Bolich discloses that “[e]xamples of hair conditioning materials suitable for use in the vehicle systems of the present invention are volatile liquid hydrocarbon or silicone agents” (*id.* at col. 9, ll. 51-53).

### *Analysis*

Claim 16 depends from claim 10 and further requires that the amphoteric urethane resin has in its structure at least one polysiloxane bond. Claim 19 depends on claim 16.

The Examiner finds that de la Poterie discloses polyurethane copolymers comprising at least one silicone-containing block, and Bolich discloses silicone resins as hair conditioners. The Examiner concludes that it would have been obvious to add silicone-containing blocks to the polyurethane resin suggested by Bhatt and Kim in order to achieve the hair

conditioning properties taught by Bolich to be associated with silicone polymers.

Appellants contend that Bolich teaches away from the claimed invention and “discloses silicone polymers that are water insoluble,” and therefore incompatible with the water-soluble resin required by claim 16 (Appeal Br. 21).

Appellants’ arguments are persuasive that the Examiner has not adequately explained why one of skill in the art would have been motivated to include silicone blocks in Bhatt’s polyurethane polymer. De la Poterie discloses that polyurethanes that can include silicone blocks are useful in make-up compositions, but not that they provide any benefit to a hair spray composition like Bhatt’s. Bolich discloses that silicones have hair conditioning properties, but the Examiner has not provided evidence that adding silicone blocks to a water-soluble polyurethane polymer would also result in resins with hair-conditioning properties.

### *Conclusion of Law*

The evidence of record does not support the Examiner’s conclusion that the cited references would have made obvious the compositions of claims 16 and 19.

### SUMMARY

We affirm the rejection of claims 10-14, 17, and 20 under 35 U.S.C. § 103(a). However, we reverse the rejection of claims 16 and 19 under 35 U.S.C. § 103(a).

Appeal 2010-003318  
Application 10/049,357

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

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